

# TEST REPORT

FCC RULES Part 15 Subpart C

FCC ID : SXVFTC1

|                 |                         |
|-----------------|-------------------------|
| Report File No. | : <u>STROR-05-024</u>   |
| Date of Issue   | : <u>Mar. 18, 2005</u>  |
| Kind of Product | : <u>FM Transmitter</u> |
| Model Name      | : <u>FTC1</u>           |
| Manufacturer    | : <u>BKM Co., Ltd.</u>  |
| Serial No.      | : <u>-</u>              |
| Test Result     | : <u>Complied</u>       |

The results shown in this report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of company.

## VERIFICATION OF COMPLIANCE

Applicant : COWON SYSTEMS, Inc.  
Kind of Product : FM Transmitter  
Brand Name : iAudio  
Model Name : FTC1  
Model Difference : -  
Report File No. : STOR-05-024  
Date of test : Feb. 25, 2005 ~ Mar 18, 2005  
Receiver EUT : -

| APPLICABLE STANDARDS               |             |
|------------------------------------|-------------|
| STANDARD                           | TEST RESULT |
| Part 15 Subpart C §15.209& §15.239 | Compiled    |

The above equipment was tested by SGS Testing Korea Co., Ltd. for compliance with the requirements set forth in the FCC RULES Part 15 Subpart §15.209& §15.239. The results of testing in this report apply to the product system that was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:

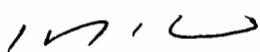


Date

Mar. 18, 2005

Feel Jeong

Approved By



Date

Mar. 18, 2005

James Kwon

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## INDEX

| <u>CONTENTS</u>                                       | <u>Page</u> |
|-------------------------------------------------------|-------------|
| 1. General Description of EUT - - - - -               | <u>4</u>    |
| 2. General Information of EUT - - - - -               | <u>4</u>    |
| 3. Test Procedure - - - - -                           | <u>5</u>    |
| 4. Test Condition - - - - -                           | <u>6</u>    |
| 5. Field Strength of the Carrier - - - - -            | <u>7</u>    |
| 6. Spurious Emission - - - - -                        | <u>8</u>    |
| 7. Emission Bandwidth - - - - -                       | <u>10</u>   |
| 8. Summary of Results - - - - -                       | <u>12</u>   |
| 9. Attachment A ? Photos of the Test Set up - - - - - | <u>13</u>   |
| 10. Attachment B ? Photos of the EUT - - - - -        | <u>14</u>   |

## 1. General Description of EUT

The COWON SYSTEMS, Inc., Model FTC1 is a FM transmitter. FTC1 Wireless music adapter let you listen to any portable music device over any FM tuner and speaker setup, without clumsy or constricting cable hookup. It is the perfect way to simply and efficiently listen to MP3s, CDs, mini-discs, and other formats in the comfort of you car or living room.

## 2. General Information of EUT

### Transmitter

|                       |                                     |
|-----------------------|-------------------------------------|
| Power Supply          | *DC 12V or DC1.5V(AAA Type Battery) |
| Operating Frequency   | 106.7~107.9 MHz                     |
| Modulation Type       | FM                                  |
| Operating Temperature | -10 ~ +50                           |
| Frequency Generation  | PLL                                 |
| Communication method  | One-way                             |
| Channel Number        | 7 CH                                |
| Antenna Type          | Wire Ant                            |

\*DC 12V is powered from an automobile DC12V system.

### 3. Test Procedure

The test procedures are performed following the test stands ANSI C.63.4-2003, if applicable.

#### 3.1 Conducted Emission

Testing was performed according ANSI C.63.4-2003 in a shielded room with peripherals placed on a table, 0.8m high over a metal floor.

It was located more than required distance away from the shield room wall.

#### 3.2 Radiated Emission

Testing was performed according ANSI C.63.4-2003 at open field test site. The EUT was placed in a 0.8m high table along with the peripherals.

The turn table was separated from the antenna distance 3 meters. Cables were placed in a position to produce maximum emissions as determined by experimentation and operation mode was selected for maximum.

The frequencies and amplitudes of maximum emission were measured at vary azimuths, antenna heights and antenna polarities.

Reported are maximized emission levels.

## 4. Test Condition

### 4.1 Test Configuration

The device was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the EUT and the supported equipments were installed to meet FCC requirement and operated in a manner, which tends to maximize its emission level in a typical application.

#### Conducted Emission Test

It's not applicable, because the EUT supplies from a DC battery.

#### Radiated Emission Test

Preliminary radiated emission tests were conducted using the procedure in ANSI C63.4-2003 clause 8.3.1.1. to determine the worst operating condition. Final radiated emission tests were measured at 3 meter open field test site. To complete the test configuration required by the FCC, the EUT was tested in all three orthogonal planes.

### 4.2 EUT Operation

EUT was tested according to the following operation modes provided by the specifications given by the manufacturer, and reported the worst emissions.

### 4.3 Peripherals / Support Equipment Used

Following peripheral devices and interface cables were connected during the measurement.

Type of Peripheral Equipment Used:

| Description     | Model Name | Serial NO  | Manufacturer        |
|-----------------|------------|------------|---------------------|
| MP3 Player      | iAudio MP3 | N/A        | COWON SYSTEMS, Inc. |
| DC Power Supply | E3631A     | MY40021247 | Agilent             |

## 5. Field Strength of the Carrier      FCC Part 15, Subpart C, Section15.239

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 47%

Temperature: 23

| Radiated Emissions  |               |             | Ant  | Correction Factors |            | Total         | FCC Limit      |             |
|---------------------|---------------|-------------|------|--------------------|------------|---------------|----------------|-------------|
| Carrier Freq. (MHz) | Amp. (dBuV/m) | Detect Mode | Pol. | Ant. (dB/m)        | Cable (dB) | Amp. (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
| 106.7               | 27.5          | Peak        | H    | 12.81              | 1.06       | 41.37         | 68             | 26.63       |
| 107.3               | 27.3          | Peak        | H    | 12.87              | 1.06       | 41.23         | 68             | 26.77       |
| 107.9               | 27.4          | Peak        | H    | 12.93              | 1.06       | 41.39         | 68             | 26.61       |

\* Remark: To get a maximum emission level from the EUT, the EUT was moved throughout the XY,XZ, and YZ planes.

### Test Equipment Used

| EQUIPMENT         | MANUFACTURER    | MODEL   | CAL DUE.  |
|-------------------|-----------------|---------|-----------|
| Spectrum analyzer | H/P             | 8593E   | Aug. 2005 |
| Test Receiver     | Rohde & Schwarz | ESVS 10 | Jun. 2005 |
| Biconical Antenna | EMCO            | 3104C   | Jun. 2005 |
| DC Power Supply   | Agilent         | E3631A  | May. 2005 |
| Anechoic Chamber  | Seo Young EMC   | -       | -         |

## 6. Spurious Emission FCC Part 15, Subpart C, Section15.209

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 47%

Temperature: 23

Low Frequency:106.7 MHz

| Radiated Emissions |                  |                | Ant  | Correction Factors |               | Total            | FCC Limit         |                |
|--------------------|------------------|----------------|------|--------------------|---------------|------------------|-------------------|----------------|
| Freq.<br>(MHz)     | Amp.<br>(dBuV/m) | Detect<br>Mode | Pol. | Ant.<br>(dB/m)     | Cable<br>(dB) | Amp.<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) |
| 213.4              | 16.5             | Q.P.           | H    | 15.92              | 1.74          | 34.16            | 43.5              | 9.34           |
| 320.1              | 10.1             | Q.P.           | H    | 15.84              | 2.10          | 28.04            | 46.0              | 17.96          |
| 426.8              | 8.4              | Q.P.           | V    | 17.50              | 2.50          | 28.40            | 46.0              | 17.60          |
| 533.6              | 6.2              | Q.P.           | H    | 20.05              | 2.80          | 29.05            | 46.0              | 16.95          |
| 640.2              | 5.8              | Q.P.           | V    | 21.87              | 3.11          | 30.78            | 46.0              | 15.22          |
| 746.9              | 5.1              | Q.P.           | V    | 22.99              | 3.24          | 31.33            | 46.0              | 14.67          |

Middle Frequency : 107.3 MHz

| Radiated Emissions |                  |                | Ant  | Correction Factors |               | Total            | FCC Limit         |                |
|--------------------|------------------|----------------|------|--------------------|---------------|------------------|-------------------|----------------|
| Freq.<br>(MHz)     | Amp.<br>(dBuV/m) | Detect<br>Mode | Pol. | Ant.<br>(dB/m)     | Cable<br>(dB) | Amp.<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) |
| 214.6              | 19.4             | Q.P.           | H    | 15.88              | 1.74          | 37.02            | 43.5              | 6.48           |
| 321.9              | 8.1              | Q.P.           | H    | 15.86              | 2.11          | 26.07            | 46.0              | 19.93          |
| 429.2              | 5.4              | Q.P.           | H    | 17.58              | 2.50          | 25.48            | 46.0              | 20.52          |
| 536.5              | 5.7              | Q.P.           | V    | 20.18              | 2.81          | 28.69            | 46.0              | 17.31          |
| 643.8              | 6.2              | Q.P.           | H    | 22.10              | 3.12          | 31.42            | 46.0              | 14.58          |
| 751.1              | 5.9              | Q.P.           | H    | 22.98              | 3.24          | 32.12            | 46.0              | 13.88          |

High Frequency : 107.9 MHz

| Radiated Emissions |                  |                | Ant  | Correction Factors |               | Total            | FCC Limit         |                |
|--------------------|------------------|----------------|------|--------------------|---------------|------------------|-------------------|----------------|
| Freq.<br>(MHz)     | Amp.<br>(dBuV/m) | Detect<br>Mode | Pol. | Ant.<br>(dB/m)     | Cable<br>(dB) | Amp.<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) |
| 215.8              | 15.3             | Q.P.           | H    | 15.83              | 1.75          | 32.88            | 43.5              | 10.62          |
| 323.7              | 8.1              | Q.P.           | H    | 15.88              | 2.12          | 26.10            | 46.0              | 19.90          |
| 421.6              | 5.4              | Q.P.           | H    | 17.68              | 2.51          | 25.59            | 46.0              | 20.41          |
| 539.5              | 6.3              | Q.P.           | V    | 20.32              | 2.82          | 29.44            | 46.0              | 16.56          |
| 647.4              | 5.7              | Q.P.           | H    | 22.34              | 3.12          | 31.16            | 46.0              | 14.84          |
| 755.3              | 5.0              | Q.P.           | H    | 22.97              | 3.25          | 31.22            | 46.0              | 14.78          |

Remark: Other spurious frequencies were not found up to 2000 MHz

To get a maximum emission level from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes.

Notes : 1.H: Horizontal polarization, V: Vertical polarization

2.Emission Level =Reading + Antenna Factor + Cable Loss

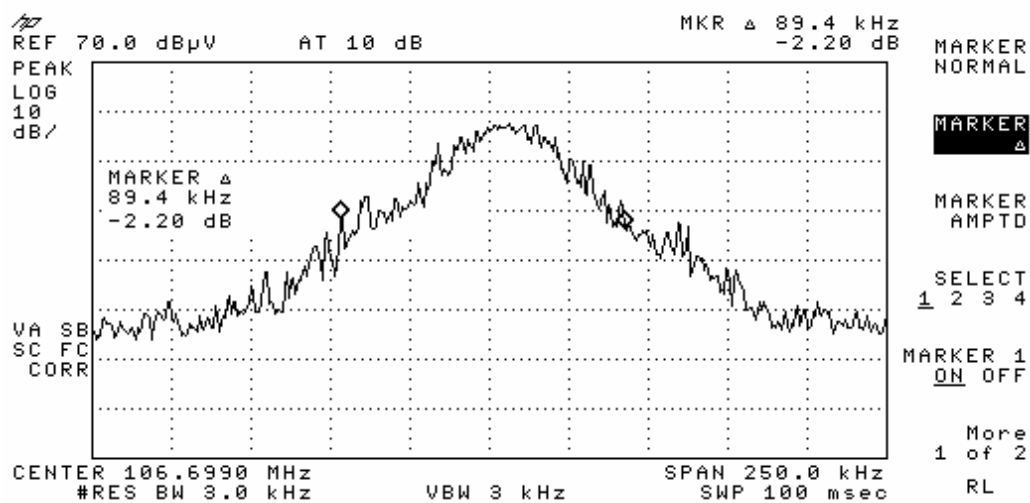
### Test Equipment Used

| EQUIPMENT            | MANUFACTURER    | MODEL           | CAL DUE.  |
|----------------------|-----------------|-----------------|-----------|
| Spectrum analyzer    | H/P             | 8593E           | Aug. 2005 |
| Test Receiver        | Rohde & Schwarz | ESVS 10         | Jun. 2005 |
| Log-periodic Antenna | Rohde & Schwarz | UHALP9107       | Jan. 2006 |
| Horn Antenna         | Schwarzbeck     | BBHA9120D(0600) | Jul. 2006 |
| DC Power Supply      | Agilent         | E3631A          | May. 2005 |
| Anechoic Chamber     | Seo Young EMC   | -               | -         |

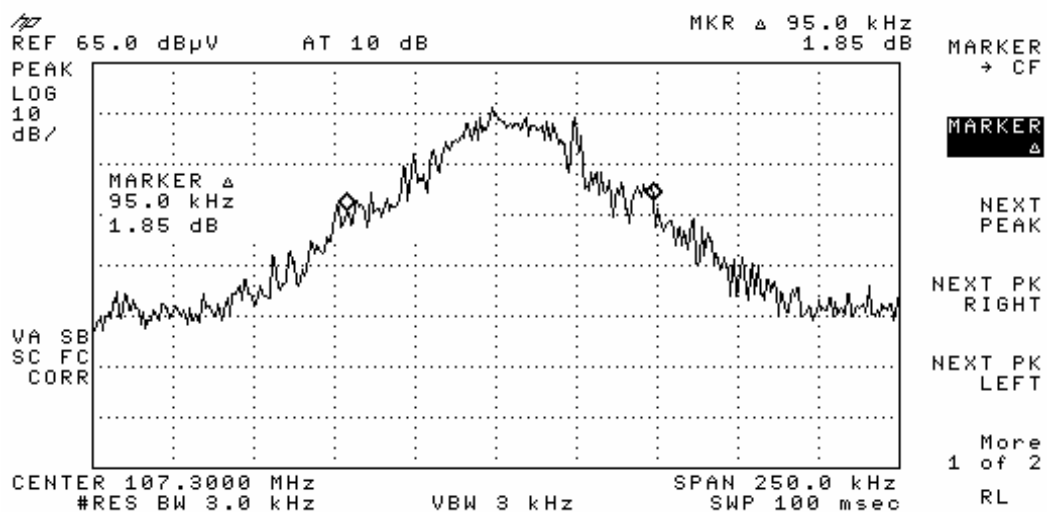
## 7. Emission Bandwidth FCC Part 15, Subpart C, Section15.239

Emission from the intentional radiator is confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band lies wholly within the frequency range of 88-108 MHz.

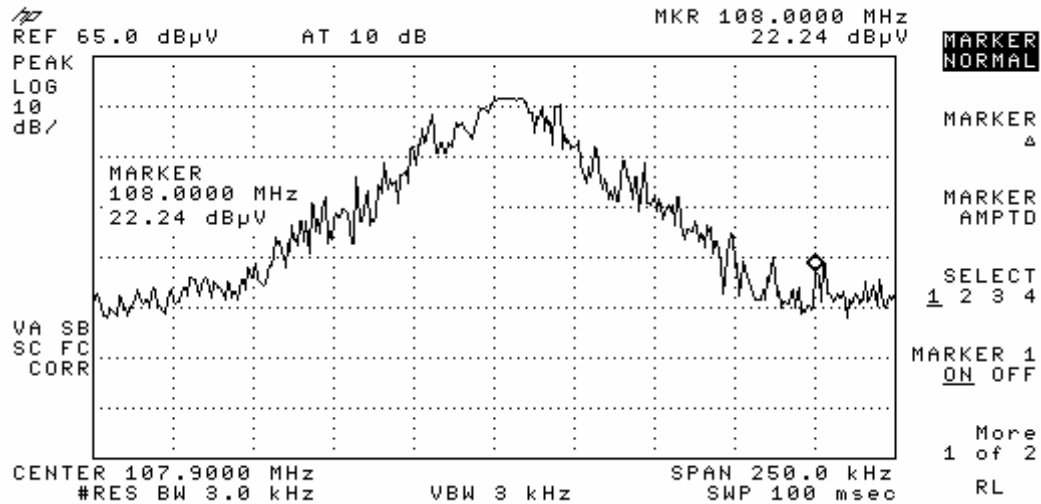
Ch1=106.7 MHz



CH4=107.3 MHz



CH7=107.9 MHz



## Test Equipment Used

| EQUIPMENT         | MANUFACTURER    | MODEL   | CAL DUE.  |
|-------------------|-----------------|---------|-----------|
| Spectrum analyzer | H/P             | 8593E   | Aug.2005  |
| Test Receiver     | Rohde & Schwarz | ESVS 10 | Jun. 2005 |
| Biconical Antenna | EMCO            | 3104C   | Jun. 2005 |
| DC Power Supply   | Agilent         | E3631A  | May.2005  |
| Anechoic Chamber  | Seo Young EMC   | -       | -         |

## 8. Summary of Results

The data collected shows that Model FTC1 complies Part 15.209 and 15.239 of FCC Technical Rules. The highest emission level observed was at 107.3 MHz radiated emission with a margin of 6.48 dB.

Emission from the intentional radiator is confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band lies wholly within the frequency range of 88-108 MHz.

The field strength of any emission within the permitted 200 kHz band is not exceed 200uV/m(48dBuV) at 3 meters

The device was tested with DC 12V input power because field strength with DC 12V was more than field strength with DC 1.5V

## 9. Attachment A – Photos of the test set up

